UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER OF
PATENTS AND TRADEMARKS
Washington, D.C. 20231

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 14

Serial Number: 08/039,498
Filing Date: 04/28/93
Appellant(s): Martin Kadner

Thomas G. Wiseman
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed .

(1) *Status of claims.*

The statement of the status of claims contained in the brief is correct.

This appeal involves claims 12 and 15-18, all the pending claims.

Claims 16-18 substituted for finally rejected claims 12 and 15 amended subsequent to the final rejection.

No claims are allowed

No claims are objected to

Claims 1-11, 13 and 14 been cancelled.

(2) *Status of Amendments After Final.*

The appellant's statement of the status of amendments after

final rejection contained in the brief is correct.

The amendment(s) after final rejection filed on 14 October 1994 been entered.

The second response after final, filed 22 December 1994, which did not include any amendments has been considered.

(3) *Summary of invention.*

The summary of invention contained in the brief is correct.

(4) *Issues.*

The appellant's statement of the issues in the brief is correct.

The rejections under 35 USC 103 over Bezzi et al taken alone and over Bezzi et al taken with Takumi et al and Sanchez et al were withdrawn prior to appeal.

(5) *Grouping of claims.*

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because appellants have not presented any separate arguments as to why the dependent claims are separately patentable. Further since the independent claim is in Jepson (37 CFR 1.75e) format and each of the dependent claims modify the steps in the preamble of the claim, the claims at best differ only in the difference of what is admitted conventional and known in the art. Further the limitations of the dependent claims are shown by or at least obvious from Bezzi et al.

(6) *Claims appealed.*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(7) *Prior Art of record.*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

US 4,347,200	Bezzi et al	03 August 1982
US 4,305,312	Takami et al	05 January 1982
US 4,179,408	Sanchez et al	18 December 1929
US 4,190,622	Landis	26 February 1980
US 2,968,833	De Haven et al	24 January 1961

(8) *New prior art.*

No new prior art has been applied in this examiner's answer.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The art areas applicable to the instant invention is that of Metal Oxide Bead Formation.

One of ordinary skill in this art is considered to have at least a BS degree, with additional education in the field and at least 5 years of practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by Applicant and the examiner (Esso Research & Engineering Co v Kahn & Co 183 USPQ 582 1974) and who is presumed to known something about the art apart from what the reference alone teach (In Re Bode, 193 USPQ 12 (16) CCPA 1977); and who is motivated by economics to depart from the prior art to reduce costs consistent with desired product properties. In re Clinton 188 USPQ 365 (367) CCPA 1976 and In re Thompson 193 USPQ 275 (277) CCPA 1976.

(9) *Grounds of rejection.*

The following ground(s) of rejection are applicable to the appealed claims.

Claims 12 and 15-18 stand rejected under 35 USC 103 as obvious to one of ordinary skill in the art in view of Bezzi et al taken with Takami et al or Sanchez et al, the combinations further in view of Ladis or DeHaven et al.

Bezzi et al fairly shows the manufacture of beads from a hydrolyzable feed, which is processed via the instant unit process steps. Bezzi et al fairly shows the formation of

droplets by vibration of a droplet forming header, the use of a reactive atmosphere (ammonia gas) to pregel the feed, generating a foam layer on top of the aqueous ammonia solution to break the fall of the pregelled droplets, completion of the gelation in the aqueous ammonium hydroxide bath, followed by drying and calcining pellets to the corresponding oxide.

Note abstract, figure 1 column 1 lines 15-30, column 2 lines 10-20, column 3 lines 19-22 and the claim.

While Bezzi et al -200 does not explicitly recite alumina bead manufacture, it would have been obvious to one of ordinary skill in the art of metal oxide bead formation and who is well aware that alumina beads are routinely made by gelling droplets to employ the process of Bezzi et al to make alumina beads from an alumina precursor feed solution. This is considered particularly obvious since in column 1 lines 8-9 and 49-50 Bezzi et al -200 teaches to employ his process to make spherical particles for catalysis, which are commonly made of alumina.

Further Bezzi et al is generic to the production of beads from materials which are hydrolyzable with ammonia and ammonium hydroxide such as material used for catalysts (column 1 lines 6-9). As shown by Sanchez et al, claim 1 and Takami (claim 1) the production of aluminum oxide beads via drop forming method is conventional. It would have been obvious to one of ordinary skill in the art to form aluminum oxide beads using the bead

forming process of Bezzi et al because Sanchez et al and Takami show that aluminum beads are routinely formed in the art, and because all three references show the aluminum oxide beads that they form the same utility in catalytic processes.

While Bezzi et al does not show the use of a ring nozzle for the formation of driplets, the use of ring nozzles to provide a plurality of streams of droplets to be solidized in a drop tower is conventional and shown by Landis (Figure item 4) and DeHaven who shows a vibrating ring nozzle in his figures. The use of conventional ring nozzles because of their expected increased production of droplets over a single nozzle would have been obvious to one of ordinary skill in the art to employ in the process of Bezzi et al.

While this combination of a ring nozzle into the process of Bezzi et al would not specifically teach the supply of the ammonia from the inside of the ring nozzle, in view of the requirement taught in Bezzi et al that each of the droplets formed enter into the aqueous gelling medium with the same degree of gelation, it would have been obvious to one of ordinary skill in the art to provide a uniform ammonia atmosphere for the ring of droplets from the nozzle either by providing an annular supply of ammonia from outside the ring or by providing an axial supply from inside the ring. Supply from the inside of the ring would have been an obvious Engineering Expedient since this ammonia

supply such as a pipe would be smaller and less costly than an annular ring supplying ammonia from the outside of the ring.

The particular numerical limitation of claims 12, 15 and 17 are a matter of routine optimization of the process of Bezzi et al to obtain the particle size desired. In re Mostovich 144 USPQ 38 In re Boesch 205 USPQ 215 (219). Further in view of the format of the claims (37 CFR 1.75(e) or Jepson form) the viscosity drying temperatures and calcination temperatures are admitted to be known in the art.

It is also noted that the limitations of the dependent claims would be in the preamble of the claims if the dependent claims were written in independent form (since the step that they modify is in the preamble) and accordingly set forth subject matter that is admitted known or conventional in the art 37 CFR 1.75(a)

(10) *New ground of rejection.*

This Examiner's Answer does not contain any new ground of rejection.

(11) *Response to argument.*

Appellant urges that Bezzi does not teach or suggest a process for producing aluminum oxide beads since in contrast to the instant invention Bezzi et al discloses a method for producing uranium oxide beads. While Bezzi et al only exemplifies the manufacture of uranium oxide beads, it is clear

from the claims of Bezzi et al as well as the abstract, column 1 lines 7-10, column 2 lines 46-53 that Bezzi et al is directed to improvements in the manufacture of speriodal particles generically, and the manufacture of uranium oxide beads is but an example. The production of spherical particles other than for nuclear free (uranium oxide) is clearly taught by Bezzi et al who lists feeds such as catalysts, fluid beds.

Appellants assert that the specifically exemplified mode of bead contact with the gelling gas in Bezzi et al must lead to unsufficient presolidification. This urging is apparently based on the assumptions that there is no rotation of the beads as they fall, that the falling beads do not cause any turbulence or mixing of the gases and that gases will not diffuse and mix even when introduced with a velocity component and accordingly the gelling gas would only contact one side of the droplet and would remain fixed one side of the droplet. Even if this argument is granted and it is not, from Bezzi et al, it would have been obvious to one of ordinary skill in the art to provide an individual gas supply to each of a plurality of individual droplet streams, this of course would inherently provide a uniform gelling gas atmosphere.

Appellants urge that the spherical particles produced by Bezzi et al would apparently have flattened surfaces not have a uniform size, would not have an optimum bead shape and in

conjunction with suitable porosity and high breaking strength and low abrasion loss, There is no factual data of record which compares the process of Bezzi et al with the instant process and the results therefrom. Further since the argued terms of non uniform size optimum bead shape, suitable porosity, high breaking strength low abrasion loss are relative terms without a reference point, they do not show any factual difference. It is considered that since Bezzi et al teaches reduction of deformation (column 1 lines 23-24, improved pregelling column 2 lines 10-22, that his product is also of uniform size and shape, has narrow grain size spectrum, has suitable porosity, high breaking strength and low abrasion loss particularly as compared to the prior art processes Bezzi et al discusses.

Appellants urge that the use of a ring nozzle, which would provide a plurality of streams and which nozzles are conventional in droplet formation as shown by Landis figure item 4 and DeHaven figure 2. It would have been readily apparent to one of ordinary skill in the art that when processing a plurality of droplet streams such as when using a plural outlet pipe header of Landis or DeHaven in the process of Bezzi et al to increase production, that the atmosphere around each of the streams be uniform. This would mandate means to do so such as the obvious expedient of providing plural reactive gas supplies. The particular placement of the plural gas supplies would be dictated by the number, size

and distribution of the distribution streams which are matters of design and the realization that the outer droplet streams will both mask the interior streams from the exterior gases and deplete the concentrations of the reactive gas of any gases that passes through the outer droplet streams. To maintain the atmosphere uniform as taught by Bezzi for both the interior and exterior streams in a plural stream process, it is clear that both interior and exterior reactive gas streams are required as part of the scale up from one stream to a plurality of droplet streams.

Appellants urge that Sanchez and Takumi et al employ different processes for making spheriodical particles. Sanchez et al and Takumi are however not relied upon for process condition, but rather to show that aluminum oxide bead production is known and that aluminum oxides beads are used in the production of catalysts, ie, the same use Bezzi et al teaches for his spherical product. Similarly appellants urge that Landis and DeHaven are not compatible with the instant invention, however Landis and De Haven are not relied upon for process conditions but to show that the use of ring nozzles to produce a plurality of droplet streams are known. Of course when using a plurality of streams production will be greater than when only one stream is used.

Appellant's brief page 9 bottom page 12, set forth general

arguments for patentability. However these arguments do not address the issue of the obviousness of providing a uniform atmosphere of reactive gas when using a plurality of droplet streams by providing a plurality of reactive gas supplies particular when some of the plurality of droplet streams would be remote from and/or masked by the other droplet streams from a single reactive gas supply. The particular location of a plurality of reactive gas supplies to obtain a uniform atmosphere around each of the droplets in each of the droplet streams.

Appellants assert that the the rejections is based on obvious to try but does not specify what is asserted what is to be tried in a known process which products spherical particles, which known process (Bezzi et al) uses the same system of reactive gas pregelling, foam cushioning of the droplet, the same droplet formation via vibrating plates, the same washing and drying etc as set forth in the instant claims and teaches that the reactive atmosphere should be uniform. It is submitted that doing what is taught to be done, it is a matter of doing, not a matter of trying.

Appellants urge that there is no reasonable expectation of success, but do not define success. It is submitted that the production of spherical beads from process taught to process taught to produce spherical beads would be fully expected, non production of spherical beads in a spherical bead forming process

would be unexpected.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

G.Straub:vr
June 14, 1995

GARY P. STRAUB
PRIMARY PATENT EXAMINER
ART UNIT 113